ENVIRONMENTAL ASSESSMENT
Fisheries Division
Montana Fish, Wildlife and Parks
Big Creek Irrigation Conversion and Water Leasing Project

General Purpose: The 1995 Montana Legislature enacted statute 87-1-272 through 273 which directs the Department to administer a Future Fisheries Improvement Program. The program involves physical projects to restore degraded fish habitat in rivers and lakes for the purposes of improving wild fisheries. The legislature established a funding account to help accomplish this goal. Montana's water leasing statute (85-2-436, MCA) was enacted by the 1989 legislature as HB 707. The purpose of this legislation is to study the feasibility of leasing existing water rights to enhance stream flows for fisheries. It is a pilot program that terminates in 1999 and allows Montana Fish, Wildlife and Parks (MFWP) to lease water rights from willing individuals who have traditionally used the water for diversionary purposes.

The lower mile of Big Creek, a tributary to the upper Yellowstone River, is over-appropriated for water rights and, as a result, is consistently dewatered during the irrigation season. Big Creek is used by native Yellowstone cutthroat trout (although these fish are likely introgressed with rainbow trout) for spawning and rearing. However, reproduction is adversely impacted by seasonal dewatering that occurs in virtually all years. Tributary dewatering is an important, if not the major, factor regulating numbers of adult cutthroat trout in the Yellowstone River. Because of shrinking distribution and declining numbers, the Yellowstone cutthroat trout is classified as a "Fish of Special Concern" in Montana.

This project is being proposed to re-water the lower mile of Big Creek by creating and then leasing "salvage water". "Salvage water" is water not used for irrigation because of improvements in efficiency. In this proposal, "salvage water" would be created by converting existing ditch/flood irrigation facilities operated by two south side landowners (Big Creek and Malcolm ranches) to a more efficient gravity fed pipeline and sprinkler system. In conjunction with converting to a more efficient irrigation system, a water lease would be implemented between FWP and the Malcolm Family, one of the south side landowners who holds a senior water right. Additionally, a water lease would be implemented between FWP and the Bar X Ranch, a north side landowner and holder of the senior-most water rights on Big Creek. The Bar X Ranch created "salvage water" by recently converting to a more efficient sprinkler irrigation system. The proposed project would provide approximately 11 cubic feet per second (cfs) of water to the lower mile of Big Creek.

I. **Location of Project:** Big Creek is a tributary to the upper Yellowstone River located approximately 7 miles south of the town of Emigrant (see Attachment 1). The stream arises in the Gallatin Range and flows northwesterly for approximately 15 miles to it's confluence with the Yellowstone River. The upper two thirds of Big Creek flows through public lands owned by the U.S. Forest Service, while the lower third of the stream flows through privately owned lands. The proposed project would be located within Township 6 South, Range 7 East, Sections 22, 23

Park

and 27 in Park County. The conversion to a more efficient irrigation system, in conjunction with two water leases from two of the senior most water rights holders, would improve instream flows in approximately one mile of stream from the mouth to the head of the Malcolm/Kendall Ditch (see Attachment 2).

II. Need for the Project: Department Goal A indicates that a Fisheries Division objective is to "protect existing aquatic habitat and improve degraded stream systems for the welfare of healthy fish populations and other wildlife species and for public enjoyment and use." The Future Fisheries Improvement Program is a tool to help achieve that objective.

Big Creek presently receives limited use for spawning and rearing by Yellowstone cutthroat trout, a "Species of Special Concern" in Montana. Cutthroat trout reproduction in Big Creek is adversely impacted by the persistent dewatering that occurs during the irrigation season. As a result of irrigation withdrawals, the lower mile of Big Creek is seasonally dewatered in virtually all years. Tributaries are the only documented habitat that river-resident Yellowstone cutthroat trout use for spawning and rearing. Persistent dewatering in a majority of these tributaries appears to be the leading factor regulating numbers of adult cutthroat trout in the Yellowstone River. Yellowstone cutthroat trout are native to Montana and are classified as a "Species of Special Concern" because of their shrinking distribution and declining numbers. Genetically pure Yellowstone cutthroat trout currently occupy only 8% or less of their native range within the Yellowstone drainage.

The intent of this proposed project is to improve instream flows in the lower mile of Big Creek, a segment of stream that is persistently dewatered during the irrigation season, to improve spawning and rearing habitat for Yellowstone cutthroat trout and, ultimately, increase the number of adult cutthroat trout in the Yellowstone River.

III. Scope of the Project: The proposal calls for installation of 15,520 feet of a gravity fed PVC pipe (starting with a 15 inch mainline out of the existing headgate location), two center pivot sprinkler irrigation systems, 5 irrigation wheel lines and one hand line to provide a more efficient method to transport and distribute water to crops. The existing ditch/flood irrigation system would be abandoned following construction of the pipeline and sprinkler systems. The cost of the new irrigation system is estimated at $289,000.00.

The "salvage" water created by this new system would remain unprotected and would be potentially subject to diversion by holders of downstream water rights. However, the Malcolm family would donate 1 cfs of a senior water right as a 20 year lease to Fish, Wildlife and Parks. This water would be insured to remain instream because of seniority of appropriation.

An additional 8 to 10 cfs of senior- most water rights would be leased to FWP by the Bar X Ranch. The Bar X Ranch recently converted to a more efficient sprinkler irrigation system on their own and, as a result, has "salvage water" available for lease. These water rights are senior-most which act to insure an additional 8 to 10 cfs of water would remain in-stream to the mouth

of the creek. The cost of the lease would be $8,000.00 per year and the term of the lease would be for 10 years, with an option to renew the lease for an additional 10 years upon agreement of the involved parties. Cost of this water lease for a 20-year term is $160,000.00.

The proposed project would insure that a minimum of 9 to 11 cfs of water would remain in Big Creek, even during the peak of the irrigation season. A Montana State University study by Pat Byorth revealed that 11 cfs at the mouth of Big Creek is sufficient to enhance the Yellowstone cutthroat trout population and insures spawning habitat remains watered.

Although all parties have reached general agreement on these water leases, the leases cannot be implemented until Change in Appropriation Water Right applications are approved by the Department of Natural Resources and Conservation (DNRC). Any water users who feel they would be effected by these water leases have an opportunity to object to this "Change". The leases cannot be implemented until all objections have been resolved if, in fact, any objections are received. The lease period would begin the first complete irrigation season following the date these "Change" applications are approved by DNRC. Additionally, all MFWP water lease agreements must be approved by the Fish, Wildlife and Parks Commission.

The proposed project, including the new irrigation system and two water leases (one donated), is expected to cost $489,000.00. Of this total, the Future Fisheries Improvement Program would be contributing up to $325,000.00.

IV. Environmental Impact Checklist:

Please see attached checklist.

V. Explanation of Impacts to the Physical Environment:

1. Terrestrial and aquatic life and habitats.

There will be no adverse impacts to fish and wildlife as a result of the proposed project. By insuring that a minimum of 9 to 11 cfs of water would remain in the lower mile of Big Creek, even during the peak of the irrigation season, fisheries (and to some extent wildlife) will be improved. Spawning and rearing habitat for Yellowstone cutthroat trout would be enhanced and, ultimately, the number of adult cutthroat trout in the Yellowstone River would increase.

2. Water quantity, quality and distribution.

Short term increases in turbidity may occur during installation of the 15 inch mainline at the existing headgate. To minimize turbidity, construction will occur during a low flow period and operation of equipment in the stream channel will be minimized to the extent practicable. A permit for a short term exemption from turbidity will be obtained from the

Water Quality Bureau and a 310 permit will be obtained from the local Conservation District.

No changes in drainage patterns or natural surface runoff will occur as a result of the proposed project. However, there will be a change in the amount of in-stream flow found in the lower mile of creek during the irrigation season. Presently, this segment of stream is seasonally dewatered in virtually all years. The proposed project, as a minimum, would increase the amount of instream flow reaching the mouth of the stream by between 9 to 11 cfs.

3. Geology and soil quality, stability and moisture.

No effects on geology and soil quality are expected as a result of the proposed project. Because a smaller amount of water would be diverted for irrigation, there may be a change in shallow groundwater recharge. The associated return flow quantity or pattern to the Yellowstone River may experience a slight change.

4. Vegetation cover, quantity and quality.

A narrow strip of vegetation will be disturbed for a linear distance of approximately 15,500 feet as a result of the installation of the water pipeline. All disturbed areas would be reseeded upon completion of the pipeline construction. Riparian vegetation along the lower 1 mile of Big Creek would benefit by the proposed project because 9 to 11 cfs of water would remain instream during the irrigation season; providing water needed for the well-being of hydrophillic plants.

5. Aesthetics.

Aesthetics would be enhanced by insuring that 9 to 11 cfs of water remain instream within the lower 1 mile segment of Big Creek. Presently, this segment of stream is seasonally dewatered in virtually all years.

7. Unique, endangered, fragile, or limited environmental resources

Big Creek presently receives limited use for spawning and rearing by Yellowstone cutthroat trout. The native Yellowstone cutthroat trout is a "Species of Special Concern" in Montana due to their shrinking distribution and declining numbers. Providing additional water in Big Creek would improve spawning and rearing habitat for these fish and, ultimately, increase the number of adult cutthroat trout in the Yellowstone River. Because rainbow trout are found both in the Yellowstone River and in upstream reaches of Big Creek, it is likely that cutthroat trout produced in Big Creek are introgressed.

9. Historic and archaeological sites

The State Historic Preservation Office has been contacted to determine the need for compliance with the federal historic preservation regulations. The project will not begin until a cultural clearance is granted.

VI. Explanation of Impacts on the Human Environment.

4. Agricultural or industrial production.

There are no anticipated adverse impacts to agricultural production as a result of this proposed project. The proposed conversion from ditch/flood irrigation to a more water efficient sprinkler system would not substantially change the amount of irrigated acreage. Sprinkler irrigation is much more efficient than flood irrigation and has the potential to actually increase crop production.

7. Access to & quality of recreational activities.

It is anticipated that the rewatering of the lower mile of Big Creek would improve overall aquatic habitat and, as a result, would improve recruitment of trout to the Yellowstone River. As a result, the recreational fishery in the river would be expected to be improved.

VII. Discussion and Evaluation of Reasonable Alternatives.

1. No Action Alternative

If no action is taken, the lower mile of Big Creek will continue to be dewatered during the irrigation season. Big Creek will continue to receive limited use for spawning and rearing by Yellowstone cutthroat trout and, as a result, the full potential for providing recruitment of juvenile trout to the Yellowstone River will not be realized.

2. The Proposed Alternative

The proposed alternative is designed to insure that a minimum instream flow of 9 to 11 cfs will remain in Big Creek, even during the peak of irrigation season. As a result, this alternative would improve fish and wildlife habitat and aesthetics and would be expected to increase Yellowstone cutthroat trout populations both in the stream and the Yellowstone River.

3. Alternatives considered but not recommended

Other means of increasing instream flows in Big Creek are not feasible at this time for the following reasons:

* There are no existing or planned water storage projects within the Big Creek drainage.
* Montana Law prevents the purchase of water rights for instream flows.
* To our knowledge, other water rights appropriated for Big Creek are not available for leasing. If other rights became available for leasing, they would be "junior" rights and would remain unprotected and potentially subject to diversion by holders of downstream water rights.

VIII. Environmental Assessment Conclusion Section

1. Is an EIS required? No.

   We conclude from this review that the proposed activities will have a positive impact on the physical and human environment.

2. Level of public involvement.

   The proposed project was reviewed and supported by the public review panel of the Future Fisheries Improvement Program. The proposed project also will be reviewed by the Fish, Wildlife and Parks Commission and will be contingent upon their approval.

   Before this project could be implemented, the water leases must be approved by DNRC. FWP will be submitting a "Change" application (contingent upon Commission approval) to DNRC which will be publicly noticed in local newspapers. Any objections to the "Change" must be resolved before the two leases are approved. The "Change" will be denied by DNRC if the lease is found to adversely affect the water rights of other users on Big Creek.

   The Environmental Assessment (EA) is being distributed to all individuals and groups listed on the cover letter. The EA will be published on the Montana Electronic Bulletin Board.

3. Duration of comment period?

   Public comment will be accepted through 5 P.M. on October 2, 1998. Submit comments to:

   Montana Fish, Wildlife and Parks
   Big Creek Instream Flow Project
   P.O. Box 200701
   Helena, MT 59620-0701

4. Person responsible for preparing the EA.

Mark Lere, Program Officer
Habitat Protection Bureau
Fisheries Division
Montana Department of Fish, Wildlife and Parks
1420 East 6th Avenue
Helena, MT 59620

Telephone: (406) 444-2432

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
1420 E 6th Ave, PO BOX 200701, Helena, MT 59620-0701
(406) 444-2535

ENVIRONMENTAL ASSESSMENT

Project Title Big Creek Irrigation Conversion and Water Leasing Project
Division/Bureau Fisheries Division -Future Fisheries Improvement

Description of Project The project is being proposed to provide appropriate minimum flows in the lower 1 mile of Big Creek to enhance the fishery. The project would be accomplished by providing funding to two south side landowners to convert from a ditch/flood irrigation system to a more efficient pipeline/sprinkler system and then leasing a portion of the conserved water from one of the landowners who holds a senior-most water right. An additional water lease would be implemented with a north side landowner who holds a senior-most water right and has recently converted to a more efficient sprinkler irrigation system.

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Terrestrial & aquatic life and habitats		X				X
2. Water quality, quantity & distribution			X			X
3. Geology & soil quality, stability & moisture			X			X
4. Vegetation cover, quantity & quality			X			X
5. Aesthetics			X			X
6. Air quality				X		
7. Unique, endangered, fragile, or limited environmental resources			X			X
8. Demands on environmental resources of land, water, air & energy				X		
9. Historical & archaeological sites				X		X

POTENTIAL IMPACTS ON THE HUMAN ENVIRONMENT

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Social structures & mores				X		
2. Cultural uniqueness & diversity				X		
3. Local & state tax base & tax revenue				X		
4. Agricultural or industrial production				X		X
5. Human health				X		
6. Quantity & distribution of community & personal income				X		
7. Access to & quality of recreational and wilderness activities			X			X
8. Quantity & distribution of employment				X		
9. Distribution & density of population & housing				X		
10. Demands for government services				X		
11. Industrial & commercial activity				X		
12. Demands for energy				X		
13. Locally adopted environmental plans & goals				X		
14. Transportation networks & traffic flows				X		

Other groups or agencies contacted or which may have overlapping jurisdiction Park County Conservation District, State Historic

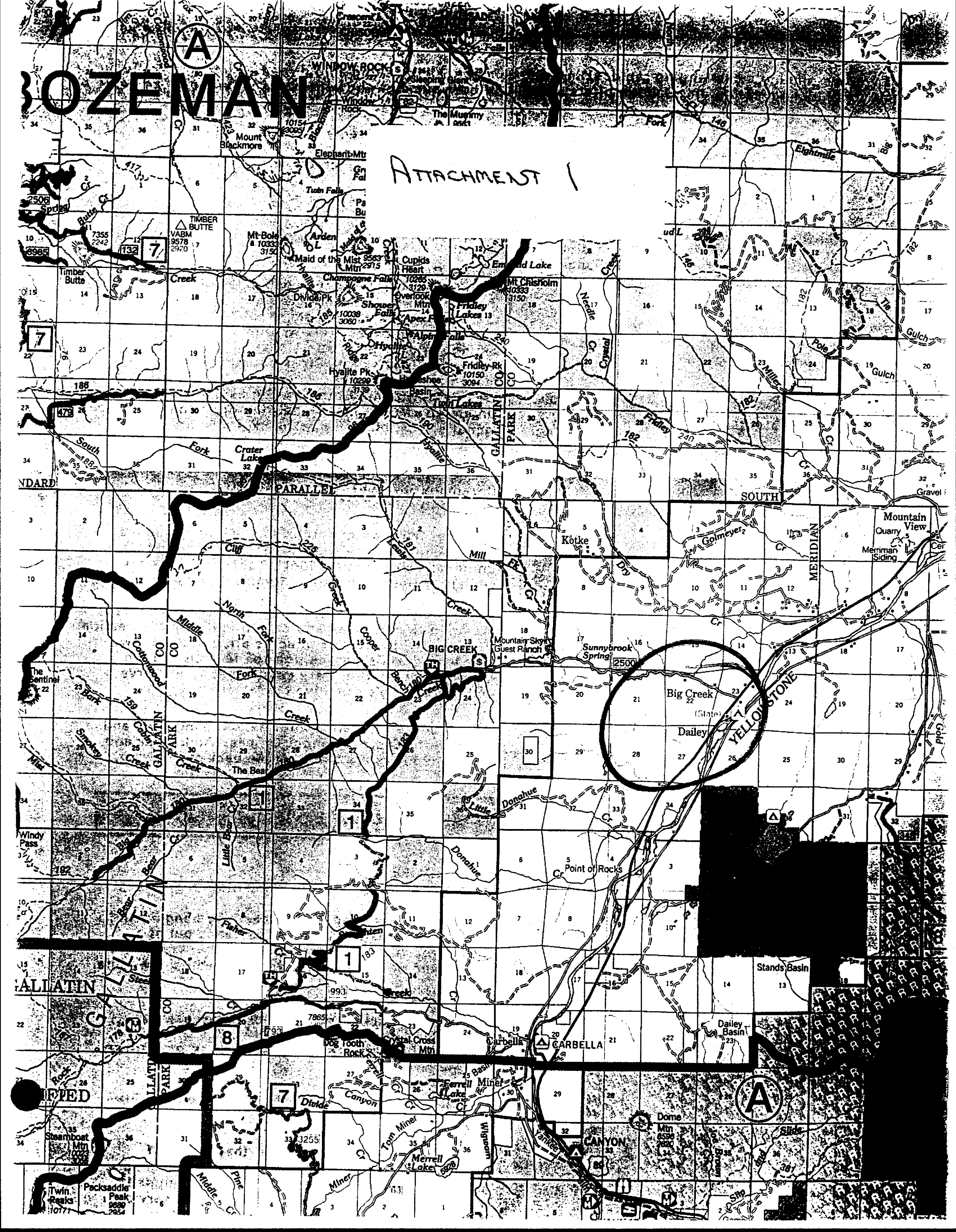
Preservation Office, MT DNRC

Individuals or groups contributing to this EA: Fred Nelson, FWP; Pat Byorth, FWP; Dick Kendall, landowner; Bruce and Connie Malcolm, landowners, NRCS

Recommendation concerning preparation of EIS: No EIS required.

EA prepared by : Mark Lere

Date: September 2, 1998


ATTACHMENT 1
BOZEMAN
GALLATIN CO
PARK CO
PARALLEL
SOUTH
MERIDIAN
BIG CREEK
Big Creek
Dailey
YELLOWSTONE
Mountain Sky Guest Ranch
Sunnybrook Spring
Kotke
Mountain View
Point of Rocks
CARBELLA
Carbella
Dog Tooth Rock
Crystal Cross Mtn
Stands Basin
Dailey Basin
Dome Mtn
CANYON
Steamboat Mtn
Packsaddle Peak
Twin Peaks
Windy Pass
The Sentinel
Hyalite Pk
Fridley Pk
Mt Chisholm
Mount Blackmore
Timber Butte
WINDOW ROCK
Crater Lake
Twin Lakes
Emerald Lake
Merrell Lake

ATTACHMENT 2